Cyber History, Future & Questions

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Black Hat

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*Insider threats
and hackers…*

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*Who reengineered
the system?*

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A great challenge today

*Let's work together to
Create something new*

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Where do we want to go with this system?

What is the end state we seek?

America as defender of the free world

Slight problem…

What are the rules?

HOME / GUEST
BONUS / PERIOD / BONUS
FOULS / PLAYER / FOULS
SCORE / MATCH / SCORE

Physics of networking?
Economics of networks?
Economics of security?
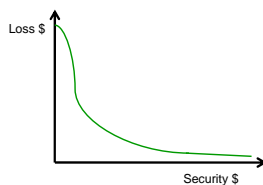*Risk management?*
Privacy architecture?

Economics of Security

MINIMIZE $C = S + L$

where C = total cost
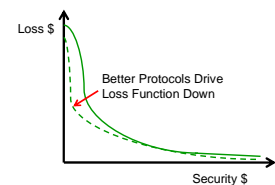S = cost of security
L = expected cost of loss

Economics of Security

Loss $ / Security $

Economics of Security

Loss $ / Security $

Economics of Protocols

Better Protocols Drive Loss Function Down

Loss $ / Security $
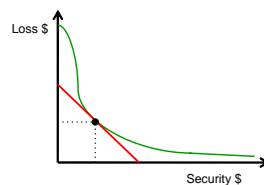
Protocols Investments

IPV6, BGP, DNS, SMS/IP, POTS …

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Correlation of Losses

$$(L_{IP}) = u L_{Internet} + v L_{SMS} + w L_{Phone} + y L_{SCADA} \dots$$

Correlations of losses due to IP failure (L_{IP}) are trending towards 1.0

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Info Sharing Incentives

"information wants to be free"
but
Stovepipe perception – "information is power"

Incentives against disclosure

OSINT/SIGINT/HUMINT

Benefits of collaboration and network effect…

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Changing Incentives

Electronic mapping and analysis

Transparency and reporting

Red Team auditing

Private Sector

How to measure security?

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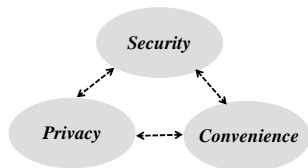

Economics of Privacy

A pure externality?
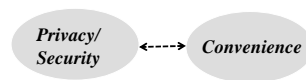
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Privacy Tradeoffs

Security

Privacy ◀----▶ Convenience

Note: Aspen

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Privacy Tradeoffs

Privacy/ Security ◀----▶ Convenience

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Questions for Privacy?

Minimizing data?
Anonymity?
Leveraging private sector?
Clouds?
Definition & measurement?
Incentive structures?
Auditing? Red teams?
Privacy and cyber?
???

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???

Aspen - Nextgen Privacy?

The multi-stakeholder process outcome will be an open source standard, supported by a policy and legal framework, for authentication and credentialing of individuals without requiring exposing personal identifying information. At the same time, the framework will support the availability to law enforcement of relevant personal/identifying information upon presentation of a suitable warrant

New Cyber Frontiers

Cyber democracy
Cyber governance
Cyber quarantines
Cyber justice
Cyber diplomacy

The Prisoners Dilemma

The Prisoners Dilemma

The Prisoners Dilemma

The Prisoners Dilemma

Iterated Prisoners Dilemma

200 X

Iterated Prisoners Dilemma

200 X

Iterated Prisoners Dilemma

Player B

	Cooperate	Defect
Cooperate	W/W	L/W
Defect	W/L	L/L

Player A

200 X

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E Pluribus Unum

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National Cyber Security Center
defense of Federal networks
.ic, .mil, and .gov
through info sharing
collaboration
standards
State of Network report

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Summary

Constitutional code
New cyber rules
New economics
New protocols
Develop cyber diplomacy…
Global collaboration…

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How can we best plant
our flag in cyberspace?

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